

REMARKS

Reconsideration is requested.

Claim 12 has been canceled, without prejudice. The claims have been revised, without prejudice.

Claims 1-10 and 14-17 are pending.

Claim 1 has been revised to exclude SiO₂ particles or wires comprising a metallic material from the supports of the claims. No new matter has been added.

The exclusion of SiO₂ particles or wires comprising metallic materials of the claims is believed to be supported by at least the court holding in *In re Johnson*, 194 USPQ 187 (CCPA 1977). Specifically, the issue before the court in *Johnson* involved the written description support for a negative limitation added to the claims to exclude the subject matter of a lost count in an interference. The *Johnson* court held that a claim to a genus with a recital of a negative proviso that did not literally appear in the specification complied with the *description* requirement. The negative proviso had the effect of excluding from the scope of the claim two species originally disclosed in the specification as within the invention, and was inserted to avoid having the claims read on a lost interference count. The claim recited a formula O-E-O-E', wherein E and E' were both positively defined, and ended "with the provisos that E and E' may not both include a divalent sulfone group and may not both include a divalent carbonyl group linking two aromatic nuclei." The proviso literally excluded more than the two species.

The court stated:

“The notion that one who fully discloses and teaches those skilled in the art how to make and use a genus and

numerous species therewithin, has somehow failed to disclose, and teach those skilled in the art how to make and use, that genus minus two of those species, and has thus failed to satisfy the requirements of §112, first paragraph, appears to result in hypertechnical application of legalistic prose relating to that provision of the statute. All that happened here is that appellants narrowed their claims to avoid having them read on a lost interference count.” See 194 USPQ 196.

In a manner similar to the appellant in *Johnson*, the applicants have excluded the SiO₂ particles or wires comprising a metallic material from the claims above, to further distinguish the claimed invention. No new matter has been added.

The objections to claims 10 and 17 are obviated by the above amendments.

The Section 112, first paragraph “written description” rejection of claims 1-10 and 12-17 is traversed. Reconsideration and withdrawal of the rejection are requested as one of ordinary skill in the art will appreciate from the present specification that the applicants were in possession of the claimed “composite reinforcement supports” as well as the previously claimed “supports”. Specifically, for example, page 2, lines 16-23 of the specification describes composites of the disclosure which include nanotubes of the disclosure that constitute reinforcements on supports. The supports of the disclosure are further described as being nanoscale/microscale supports. See page 2, lines 29-31 of the specification. The composites of the disclosure are further described, for example, at page 5, lines 8-11 and page 5, lines 13-15 of the specification. Page 5, lines 35-37 describes “The subject of the invention is also composites characterized in that they comprise CNTs bonded to nanoscale/microscale supports in a matrix.” The

claims are supported by an adequate written description and withdrawal of the Section 112, first paragraph "written description", rejection is requested.

The Section 112, second paragraph, rejection of claims 1-10 and 12-17 is traversed. The claims are submitted to be definite. One of ordinary skill will appreciate the metes and bounds of the claimed invention. Withdrawal of the rejection is requested.

The Section 102 rejection of claims 1-8, 11 and 15 over Singh (Chemical Physics Letters 2003; 372:860-865) "in view of" Rice (U.S. Patent No. 5,770,099) and Heaney ("Quartz", in AccessScience@McGraw-Hill, accessed on 6 January, 2010), is obviated by the above amendments. Specifically, the quartz (SiO_2) particles of the reference are not included in the claimed invention. Withdrawal of the rejection is requested.

The Section 103 rejection of claims 1-8, 15 and 16 over Rao (Material Research Innovation 1998; 2:128-141), and Ma (Journal of Material Science 1998; 33: 5243-5246) is traversed. Reconsideration and withdrawal of the rejection are requested in view of the following distinguishing comments.

Rao teaches the growth of carbon nanotubes in a quartz tube (see figure 1), but not on nanometric and/or micrometric-sized reinforcement supports. The quartz tube has an internal diameter of 10 mm or 25 mm (Figure 1). Its length is much larger than its internal diameter (Figure 1). Thus, the support on which the carbon nanotubes are grown is not a nanometric and/or micrometric-sized reinforcement support.

The cited Ma document teaches a hot-press process comprising mixing carbon nanotubes and SiC powder together, and heating the mixture at high temperature to make a ceramic. There is no teaching in the cited Ma document of the growth of carbon nanotubes on nanometric and/or micrometric-sized reinforcement supports. There is no motivation in Ma, or the other cited art, to have grown carbon nanotubes on nanometric and/or micrometric-sized reinforcement supports as claimed

Both of the cited references lack at least a disclosure of contacting a nanometric and/or micrometric-sized reinforcement support with a mixture of carbon source compound and a catalyst. The claims therefore would not have been obvious in view of the combination of cited art.

Withdrawal of the Section 103 rejection is requested.

The Section 103 rejection of claims 1-4 over Rao in view of Wang (U.S. Patent Application Publication No. 2003/0119920), is traversed. Reconsideration and withdrawal of the rejection are requested in view of the following distinguishing comments.

Rao teaches the growth of carbon nanotubes in a quartz tube (see figure 1), but not on nanometric and/or micrometric-sized reinforcement supports. Thus, the cited reference at least lacks a disclosure of contacting a nanometric and/or micrometric-sized reinforcement support with a mixture of carbon source compound and a catalyst.

Wang teaches seeding catalyst particles on a porous support material (e.g., foam, felt, mesh, membrane and honeycomb (see ¶[0041] of the Wang reference), and then exposing the seeded support to a carbon source in a gaseous state to grow carbon

nanotubes on the support. Thus, the cited reference lacks at least a teaching or suggestions of contacting a nanometric and/or micrometric-sized reinforcement support with a mixture of carbon source compound and a catalyst.

Both references lack a teaching or suggestion of at least contacting a nanometric and/or micrometric-sized support a nanometric and/or micrometric-sized reinforcement support with a mixture of carbon source compound and a catalyst.

The claimed invention would not have been obvious in view of the cited combination of art. Withdrawal of the Section 103 rejection is requested.

The Section 103 rejection of claims 9 and 10 over Rao, Wang and Choi (Surface Science 2000; 462: 195-202) is traversed. Reconsideration and withdrawal of the rejection are requested as the further reference of Choi fails to cure the deficiencies of Rao and Wang noted above with regard to the rejection of claim 2, from which claims 9 and 10 depend. The claims are submitted to be patentable over the cited combination of art.

The Section 103 rejection of claim 17 over Rao, Wang and Xu (Applied Physics Letters 1999; 74(17): 2549-2551) is traversed. Reconsideration and withdrawal of the rejection are requested as the further reference of Xu fails to cure the deficiencies of Rao and Wang noted above with regard to the rejection of claim 2, from which claim 17 depends. The claims are submitted to be patentable over the cited combination of art.

The Section 103 rejection of claim 12 over Singh (Chemical Physics Letters 2003; 372:860-865), Rice (U.S. Patent No. 6,770,099), Heaney and Andrews (Current

Opinion in Solid State and Material Science 2004:8:31-37) is moot in view of the above amendments.

The Section 103 rejection of claims 1, 5, 14 and 15 over Singh, Smalley (WO 00/17102) and Maruyama (Chemical Physics Letters 2002; 360:229-234), is traversed. Reconsideration and withdrawal of the rejection are requested in view of the above and the following distinguishing comments.

Singh does not consider growing carbon nanotubes on anything other than thin quartz flakes because it allows to increase the yield of the nanotubes. The reference is not concerned with improving the reinforcing properties of conventional composite reinforcement materials. Rather, Singh aims to produce nanotubes in large scale. The reference thus lacks the disclosure of contacting a nanometric and/or micrometric-sized reinforcement support with a mixture of carbon source compound and a catalyst.

Smalley and Maruyama are being relied upon for the teaching that an alcohol can be used as a carbon source compound. This does not cure the deficiencies of Singh.

The claimed invention would not have been obvious in view of the cited combination of art. Withdrawal of the Section 103 rejection is requested.

The Section 103 rejection of claims 1-4 and 13 over Rao and Saito (U.S. Patent No. 6,979,433) is traversed. Reconsideration and withdrawal of the rejection are requested in view of the above and the following. There is no suggestion in Rao, or the combination of Rao and Saito, to have made the claimed invention. The secondary

BAI et al.
Appl. No. 10/587,546
Atty. Ref.: 5006-11
Amendment
March 21, 2011

reference fails to cure the above-noted deficiencies of the primary reference.

Withdrawal of the rejection is requested.

The claims are submitted to be in condition for allowance and a Notice to that effect is requested. The Examiner is requested to contact the undersigned, preferably by telephone, in the event anything further is required.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: /B. J. Sadoff/
 B. J. Sadoff
 Reg. No. 36,663

BJS:
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100